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Having completed a brief discussion of the highlights in guidance and instrumentation at the Tyura Tam Missile Test Range, I wish you to turn your attention to these facilities found at the Kapustin Yar Missile Test Range.

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The Kapustin Yar Missile Test Range (Plate 1) is located in an area approximately 60 nm southeast of Stalingrad along the Volga-Akhtuba Flood Plain. The test range consists of a SAM launching area in the northern extremity of the rangehead and 4 major SSM launching areas, Zones 7, 8, 9 and 10, which are in an approximate north-south line on the eastern extremity of the rangehead. All of these launching areas have sophisticated independent instrumentation networks with the exception of Zone 8, though the proximity of this Zone with Zone 7 to the north does not preclude the employment of the instrumentation facilities at Zone 7 with the operation of Zone 8.

The first portion of this discussion will be limited to only those instrumentation and guidance facilities that have received the major interest of the intelligence community. The second and final portion of the discussion will be concerned with impact areas and their associated instrumentation.

First, let us examine the SAM launching area with its related guidance and instrumentation facilities (Plate 2). This particular discussion will be limited solely to the herringbone SAM launching area. Guidance for the launching area is located west of the launch site and to the rear of the direction of fire. Two security fences enclose a probable Yo-Yo radar bunker, a probable bore sight pole, and several associated buildings.

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Pause. Tracking instrumentation facilities (Plate 3) are located forward of the launch site with relation to the direction of fire. These sites are slightly off center of a line drawn from the guidance facility through the center of the launch site. The network consists of five probable instrumentation sites which form an approximate 8 nm square configuration, with a possible sixth instrumentation site located east of the square. All of these sites are interconnected by cable scars which appear to emanate from the guidance and support areas.

Zone 7 (Plate 1), first in discussion of the major SSN launch sites, is the northernmost site in the north-south line of launch sites. It contains (Plate 4) a control center in the support area and four instrumentation sites which form a modified V configuration opening downrange in the direction of fire. The guidance and instrumentation control center (not shown in detail on this graphic) contains approximately half a dozen buildings and several unidentified objects, all interconnected by cable scars. It has been thought that this control center possibly employs a single-point radio guidance system. From the control center cable scars extend approximately 9 nm in northeasterly and southeasterly directions, forming the two legs of the modified V configuration. Four instrumentation sites are located on these legs; two at their midpoints, and two at their termini. Two estimated possible directions of fire from true north were determined by the azimuths of perpendicular bisectors of lines connecting the corresponding instrumentation sites of each leg.

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Zone 9 (Plate 5) contains a guidance and instrumentation network consisting of a control center, two single-point radio guidance sites, and two major instrumentation sites. The control center at this Zone is the largest and most complex control center on the range. From this control center cable scars extend to the two guidance sites (41 and 46) located to the rear of the launch sites. Additional cable scars emanate from the control center, extending approximately 9 nm in northeasterly and southeasterly directions, to the major instrumentation sites (40 and 47). These scars form the two legs of a V configuration similar to the one previously discussed at Zone 7. An estimated direction of fire was determined by the same method employed at Zone 7; that is the azimuth of a perpendicular bisector of a line connecting the two major instrumentation sites.

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Zone 10, the most recently constructed and only rail served launch site at the range, contains probable inertial-type guidance equipment at the launch pad, a possible radio guidance site, and two extremely unusual and unique "L"-shaped instrumentation and/or guidance patterns. The probable inertial-type guidance equipment consists of two probable collimation towers located on the south launch pad. A possible radio command guidance site is located at site 62, one nm due west of the launch area, which could be a part of a radio inertial guidance system. Associated with this launch site are two "L"-shaped instrumentation and/or guidance patterns. The smaller of these patterns is located to the rear of the launch site. This "L" pattern contains four facilities, all of which contain optical

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and/or electronic tracking equipment. From the instrumentation center at the vertex of the "L", a cable scar extends northeasterly to a fifth instrumentation site. Another cable scar extends southwesterly to the proximity of a radar site that contains one token-type radar, and associated equipment. The larger of the 2 "L" patterns, located approximately 30 nm downrange, consists of 4 facilities that also contain optical and/or electronic tracking equipment. Suggested theories of operation for these "L" patterns have been as follows:

1. Normal tracking stations without any unusual or unique function
2. A unique surface triangulation system
3. A unique type of guidance system

It is interesting to note with relation to this pattern, that there is a high accuracy tracking range under development at the Rome AFB in New York state that is similar to these configurations found at Zone 10. Even with the extensive physical and mensural data obtained from the photo analysis, these patterns are even today an ever present mystery as to their true operation.

In addition to the token-type radar mentioned in the discussion of Zone 10 two other type radars with associated equipment are located near the Vladimirovka Airfield. One of the token-type radars located near the airfield may be a strike-out radar with an associated Rock Cake Radar.

Having briefly discussed the highlights of guidance and instrumentation found at the rangehead, please direct your attention to the sole probable missile impact area of the range that has been discovered to date by the analysts.

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This impact area is located at a point approximately 78 nm downrange on the northern extremity of our photo coverage. The large practically circular area of impact (960' x 900') is characterized by an extensive surface disturbance which precludes determining the number of hits in that area. Surrounding this circular area are at least 12 and possibly more probable craters of near misses. Assuming the circular area to contain 50% of the total hits, this would result in a CEP of not greater than 500 feet. The center of the CEP is located approximately 1,085 feet east-northeast of several unidentified objects, possible instrumentation. These objects are adjacent to extensive vehicular activity that extends 4,250 feet north-northwest to a possible instrumentation site and approximately 10,850 feet south-southwest to a second possible instrumentation site. A probable range camp is located approximately 5 nm to the west-northwest.

Gentlemen, with this the resting place of all good missiles, we rest this presentation.

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